Academic integrity-artificial intelligence nexus

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INQAAHE Forum 2024, Transforming Society: Social Responsibility trough Quality Assurance of Tertiary Education June 11, 2024. Design-thinking workshop, Sub-theme 3: Designing Curricula for Societal Impact, 14:30 to 16:00, Central Library – Room 3.1

1 Presentation Organisation

- Introduction (14:30-14:35)
- Background information (14:35-15:00)
- Checklist exercise (15:00-15:50)

    Breaking into 4 or 5 working groups (15:00-15:05)

    Working group checklist creation (15:05-15:40)

    Reporting on checklists created, comparison/contrast discussion (15:40-15:55)

- Wrap-up (15:55-16:00)

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Introduction

- Role of presenters in this session

- Institutional scope of view the authors/presenters represent

- Explanation of how the workshop's activities and outcomes

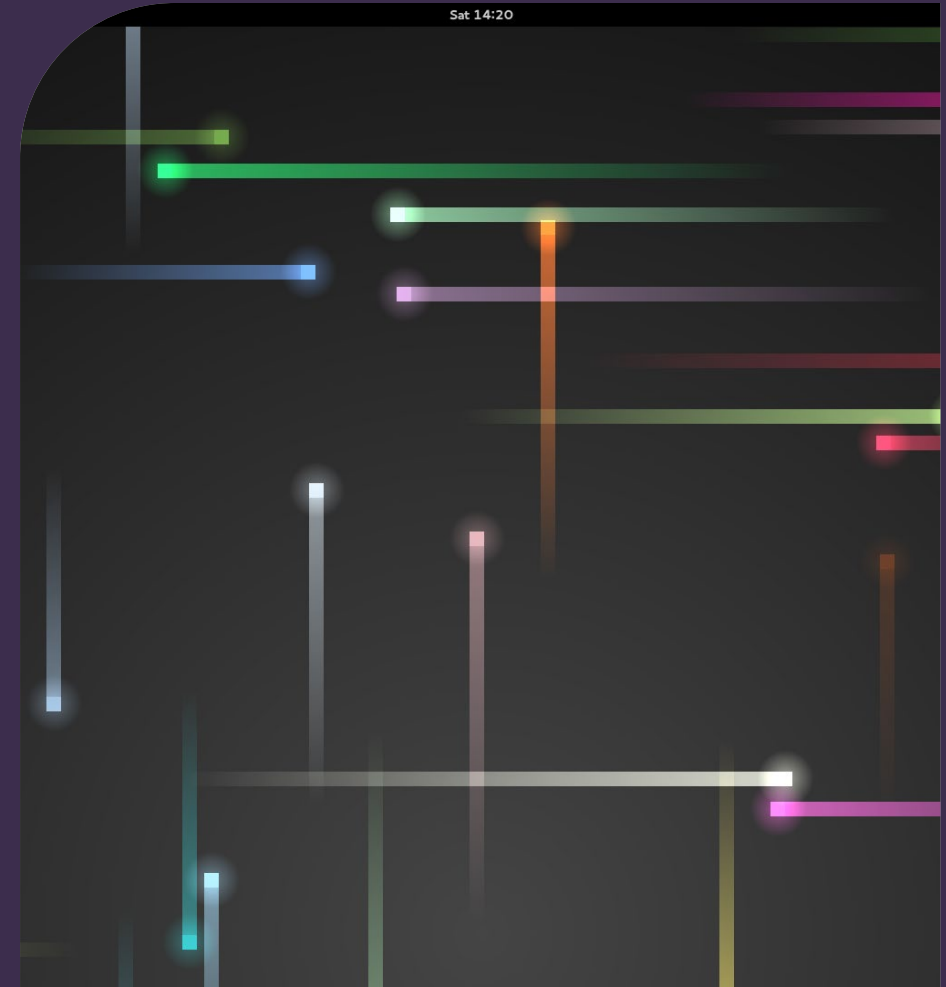- Principal aim: Provide an exercise that can help shape the writing of guidance notes to support regulatory policies.
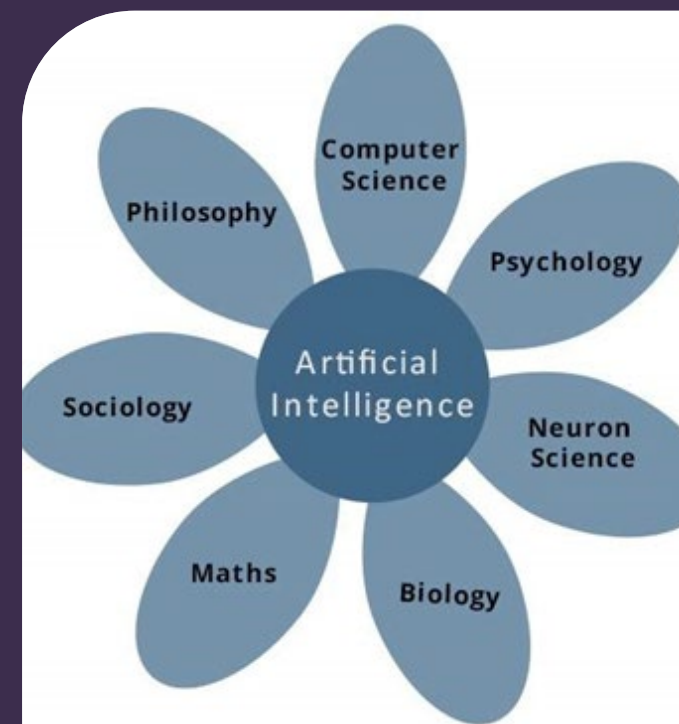
Background information

- You may want to consider some of the points made here as elements in the formation of the checklist.

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Why the term nexus?

- Definition (in an educational context): **"two activities co-existing in a symbiotic relationship"** (British Academy, 2022, p.7); a "link between two different ideas or objects which links them in a series or network" (Scollon & Scollon, 2004, p. viii).

- The approach taken here is based on McKinley et al.'s (2021) approach to analysing a nexus; namely, that **a nexus represents a connection whose understanding often is an unproblematised concept whose connections are insufficiently analysed to reflect the complexity of the interconnected activities**, in this case the relationship between academic integrity and the newly arising challenges on traditional academic values from generative artificial intelligence programs (often referred to as Large Language Models [LLM]).

There is a qualitative methodology called *nexus analysis* that focuses on how discourse shapes action (Scollon & Scollon, 2004). Its approach is relevant to this discussion because of what the methodology attempts to understand.

What we said in the presentation proposal:

"The nexus of [academic integrity and artificial intelligence] challenge[s] the relevance and effectiveness of curricula in meeting disciplinary/professional outlooks and social impact. Institutional agility, particularly through policy and procedure development and implementation, is critical because the fast-evolving technology and the learning curve that occurs to determine the negative and positive impacts of GAI on the assurance of the outcomes derived from learning and research processes."

From Scollon and Scollon (2004, p. viii):
"We will use the term 'nexus of practice' to focus on the point at which historical trajectories of people, places, discourses, ideas, and objects come together to enable some action which in itself alters those historical trajectories in some way as those trajectories emanate from this moment of social action."

From Scollon and Scollon (2004, p. 618):
"[Nexus analysis] is itself an attempt to weave a meaningful network among them so that the broadest outlines of a specific problem can be drawn."

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The importance of quality assurance and the role of academic governance

- Two concepts frame the artificial intelligence-academic integrity nexus (AI-AI nexus)

  - Academic integrity has been a wicked problem for education since time immemorial

  - Artificial intelligence through the advent of ChatGPT 4.0 created a Black Swan scenario for higher education (Padró et al., 2023)

- The AI-AI nexus also reflects a challenge between the student as consumer normative framing (used by universities to attract students and is the basis of quality assurance and yet seen by students shouldering a higher proportion of the costs of higher education participation as a 'paying for a degree' mindset) and the traditional academic values as framed through the norms of academic freedom (Padró, 2022a)

The importance of quality assurance and the role of academic governance

- The AI-AI nexus and the dynamics driving it have increased the level of uncertainty in regard to academic integrity

- Uncertainty can occur when there is too much (overwhelming) or too little information making success in decision-making and subsequent actions highly problematic (Epstein, 1999)

- Three types of uncertainty (Funtowicz & Ravetz, 1994):

    1. errors in available data
    2. imprecise methodologies
    3. ignorance

The Rumsfeld Matrix sets out the parameters well

Retrieval Data	Known	Unknown
Known	Known-Known	Known-Unknown
Unknown	Unknown-Known	Unknown-Unknown

Source: de Valk, 2018, p. 19

The importance of quality assurance and the role of academic governance

- "Under quality assurance, the prime purpose is to serve those who are not directly responsible for conducting operations but who have a need to know—to be informed as to the state of affairs and, hopefully, to be assured that all is well" (Juran, 1999, p. 2.13).

- Assurance is the mechanism for regulators and higher education institutions to provide a warranty assuring that the academic credential is 'fit for purpose' and the graduates holding that credential have knowledge (and hopefully mastery) of the skills that make up the 'acceptable standards of practice' for the job or occupation being pursued or exercised as an employee.

- A warranty differs from a guarantee.
    - A warranty assures reliability (Christensen et al., 2014), a promise that the graduate is 'fit for purpose'.
    - A guarantee assures the quality of the graduate, i.e. to meet the satisfaction of employers (Kaplin et al., 2019; Owen, 2004).

- Priest's (1981) warning regarding one of the legal theories of warranties should be noted: "upon the discovery of a defect, a consumer acts on the basis of perceptions formed from general information or experience regarding products" (p. 1304).

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# The importance of quality assurance and the role of academic governance

- The case can be made that the traditional managerial techniques may not be effective in the support of institutional governance because their processes are too slow to keep up with the highly fluid nature of artificial intelligence developments and the ubiquitous challenges regarding the maintenance of academic integrity if, for no other reason, technology has created an arms race environment (Eaton, 2022) bounding AI-AI nexus activities.

- Much of the activity within higher education institutions focuses on practical, applied approaches to keep up the institutional advantage in the arms race as they fight off external software developers and third-parties providing assessment-based information to students for a fee.

- Missing is a global discussion of the meaning of the AI-AI nexus and the assumptions that the nexus challenges. In other words, the reactive nature of institutional/sector response to the nexus is inductive in nature. Not much attention and effort has gone toward pursuing a deductive approach based on analysing and understanding the problem(s) the AI-AI nexus brings to the fore to make a non-reactive sense of the complexity of the interconnection and the potential intended and unintended effects of institutional/sectoral response.

The importance of quality assurance and the role of academic governance

- Risk registers themselves given the strategic planning nature of higher education institutions may be too fragmented and uncoordinated to keep up in this arms race environment because of an inability to provide a coherent, comprehensive and flexible approach to dealing with AI-AI nexus concerns (Padró et al., 2023).

- Also problematic is that certain academic disciplines require their students to learn and master LLM software (design and/or use), making a coordinated approach challenging because 'one size does not fit all'.

  - A corollary point is that the products using artificial intelligence are of variable quality because of the data scraping nature of LLMs and the challenge in establishing query parameters.

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Shifting gears: some learning and teaching considerations impacting the AI-AI nexus
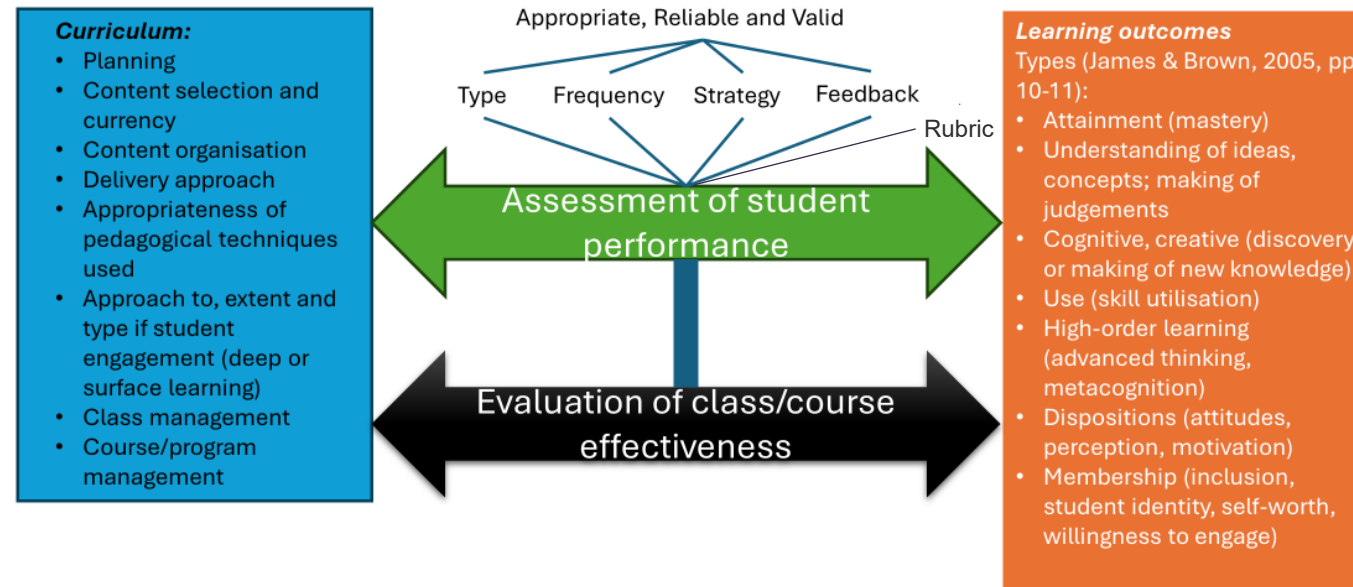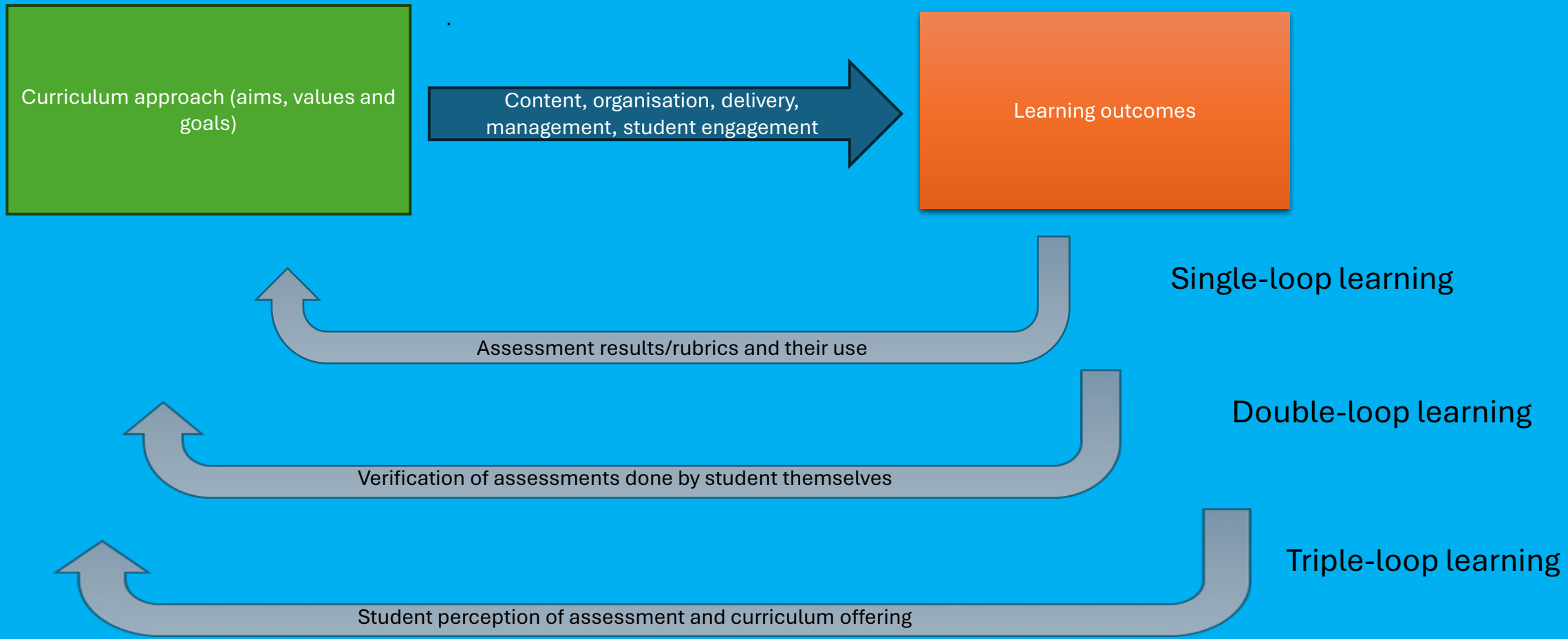
Single-loop learning: "whenever an error is detected and corrected without questioning or altering the underlying values of the system" (Argyris, 1999, p. 68).

Maintaining "the field of constancy by learning to design actions that satisfy existing governing variables" (Argyris & Schőn, 1974, p. 19).

Double-loop learning: "when mismatches are corrected by first examining and altering the governing variables and then the actions" (Argyris, 1999, p. 68).

"Double-loop learning changes the governing variables (the "settings") of one's programs and causes a ripple effect of change" (Argyris & Schőn, 1974, p. 19).

Triple-loop learning: Forming new processes or methodologies to reframe problems (Hoe, 2007). "Triple-loop learning is concerned about increasing the fullness and depth of learning about the diversity of issues faced" (p. 212).

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Here is an illustration of some of the many elements/points that can be components of an academic's curriculum design process. This comes from a framework that was the basis of our University's SET.

Note that assessment is an embedded element in this framework as part of the feedback element. For making a checklist, assessment should be an explicitly stated element.

Teaching & Learning Standards

Scholarship

Teaching

Learning

Evidence of Academic's Learning & Inquiry; Evaluation of Practice & Continued Professional Development

Appropriateness of Research Material in Course

Currency of Research in Course

Integration of Research in Course

Instructional Research Techniques

Integration of scholarship, research and professional activities with teaching and in support of student learning

Designing & Planning of Learning Activities

Instructional Delivery

Course Management & Support (Coordination)
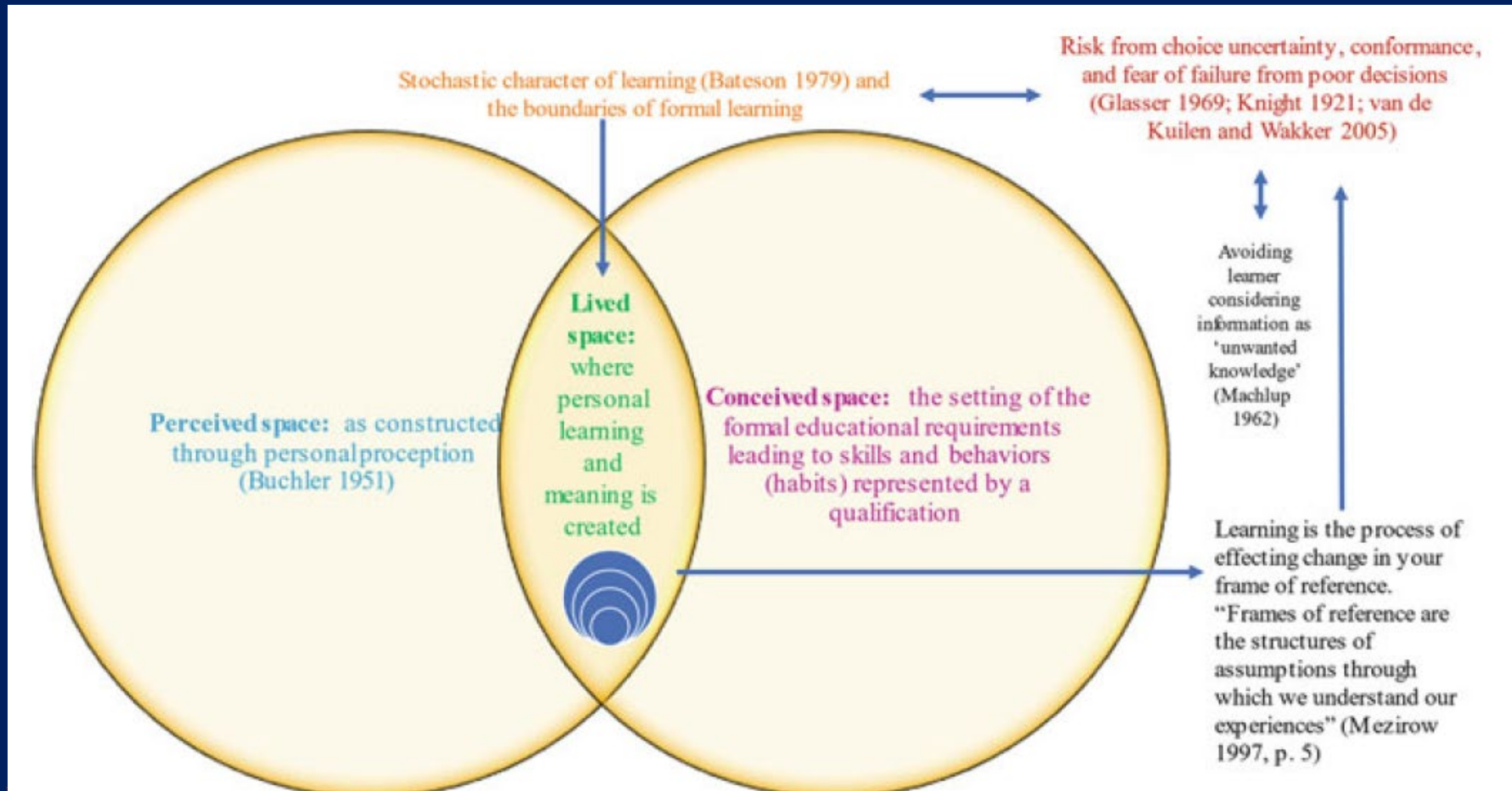
Instructional Assessment (Valid Asst.) & Rationale

IT management

Pedagogical & Disciplinary Knowledge

1. Alignment w/in program
2. Alignment to AQF, TEQSA Stds and RRF (responsibility to students)
3. Alignment to external accreditation requirements (if any)
4. Alignment to institutional and program graduate attributes
5. Reflection of Disciplinary Good /Best Practice
6. Demonstration of subject matter competence
7. Demonstration of accurate and sound information on matters of race, gender, individual differences, and ethnic and cultural perspectives.
8. Demonstration of institutional commitment
9. Qualifications to teach the course

Learning Theory/Approach – Developing Effective Learning Environments, Support & Guidance

Communication Style & Skills

Group Process/Collaboration

Application of Research and Link to Deep Learning

Feedback to Students: How, What, How often?

Professional & Personal Effectiveness in Allowing Student Learning to Occur

Appropriateness of Pre-requirements & Course Expectations

Learning Occurring in Proper Facilities/Environment

Level of Success in Meeting Defined Learning Outcomes

Caring & Effective Teaching Skill

A student learning perspective: Third space (lived experience) learning model

Source: Padró, 2022b, p. xxi)

Sen's (e.g., 1992) capability framework as a contextualising condition for the striving of outcomes of lived experience(s)

Capability
Social functionings & doings

Inputs (student's perceived space)

Lived experience (outcome)

Environment (conceived space, i.e., the understood external realities framed as expectations)

Capability
Economic/work functionings and doing

The process shaping lived experience and individual functionings and doings to achieve desired outcomes – Weick's (1995) sensemaking model:

1. Grounded in identity construction
2. Retrospectiveness (looking backwards as a basis for forward-thinking – Brown et al., 2015)
3. Enactive of sensible environments
4. A social process
5. Ongoing
6. Focused on and by extracted cues
7. Driven by plausibility rather than accuracy

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Rubrics are considered important elements of the assessment process. They are, in effect, a framing on how to evaluate student performance within a classroom (activities, assessment artefacts, homework, or tasks of engagement).

Dawson (2017) discussed 14 rubric design elements found in the literature. His analysis was based on rubrics needing to demonstrate three elements originally identified by Popham (1997): "evaluative criteria, quality definitions for those criteria at particular levels and a scoring strategy" (Dawson, 2017, p. 349).

Specificity
Secrecy
Exemplars
Scoring strategy
Evaluative criteria
Quality levels
Quality definitions
Judgement complexity
Users and uses
Creators
Quality processes (reliability and validity of rubrics)
Accompanying feedback information
Presentation
Explanation

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Recently, it seems that one approach becoming prevalent in the AI-AI nexus is the use of checklists

- Checklists have been prevalent in the aviation industry and other high reliability organisations for a long time. Now, the medical professions are using them on a routine basis because of their potential to improve patient outcomes (Winters et al., 2009).

- Types of checklists (Winters et al., 2009, p.2/9):

    1. static parallel (completed by one person involved in an operation of something, performed as a check and do set of tasks)
    2. static sequential with verification (based on a challenge and response approach, i.e., second person verification)
    3. static sequential with verification and confirmation (more typical in team-based settings when tasks are done by different members of the team)
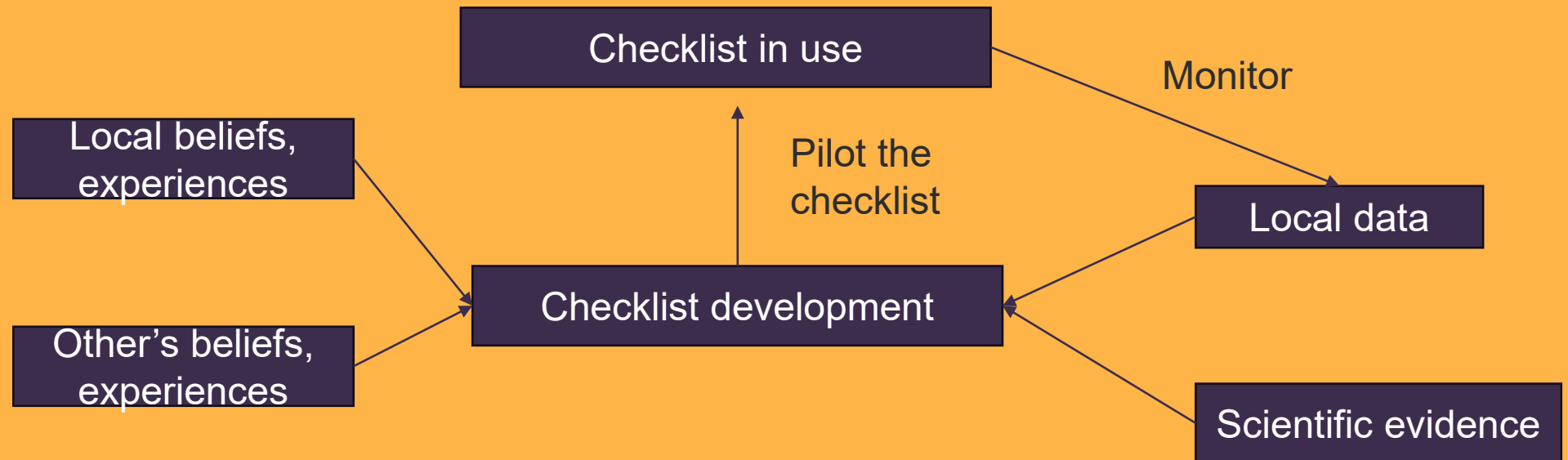   4. dynamic (uses flowcharts to guide complex decision-making)

Checklist attributes (Flottorp et al., 2013, p. 4/11)

1. **Comprehensiveness: It should include all important domains and determinants.**

2. **Relevance: Irrelevant and unimportant domains and determinants should not be included.**

3. Applicability: It should be applicable across different (relevant) settings,…

4. **Simplicity: It should be as simple as possible**.

5. Logic: The structure … should be logical, easy to understand and easy to remember…

6. **Clarity: Each dimension and determinant should be clearly labelled, defined and easy to understand.**

7. Usability: It should be possible …[for all staff] to use the checklist.

8**. Suitability: It should be suitable both as a checklist for identifying determinants of practice and for reporting determinants of practice in studies and in systematic reviews [***a priori*** evaluation framework for subsequent review(s)].**

9. Usefulness: It should be useful to people designing implementation strategies and reporting determinants of practice in research reports.

Checklist development principles (Winters et al., 2009, p. 5/9)

1. **Design checklists based on …needs and the realities of their work** by doing ethnographic studies of the … work and involvement of potential users.

2. **List the most critical items at the beginning of the checklist whenever possible.**

3. Avoid long checklists if possible. Subdivide long checklists into small meaningful sections or group checklists in time and space (for example, one checklist for this moment in time).

4. **Pay close attention to usability, including the time it takes to complete the checklist, potential negative effects on … [staff's] work and… [student well-being], and feedback from potential users.**

5. Perform rigorous pilot testing and validation of the checklist before full-scale implementation.

6. **Include potential users, content experts, and human factors/usability experts on the design team.**

7. Re-evaluate and update checklists periodically based on new literature and organizational experiences.

Elements in developing a checklist (Winters et al., 2009)

Checklist in use

Monitor

Local beliefs, experiences

Pilot the checklist

Local data

Checklist development

Other's beliefs, experiences
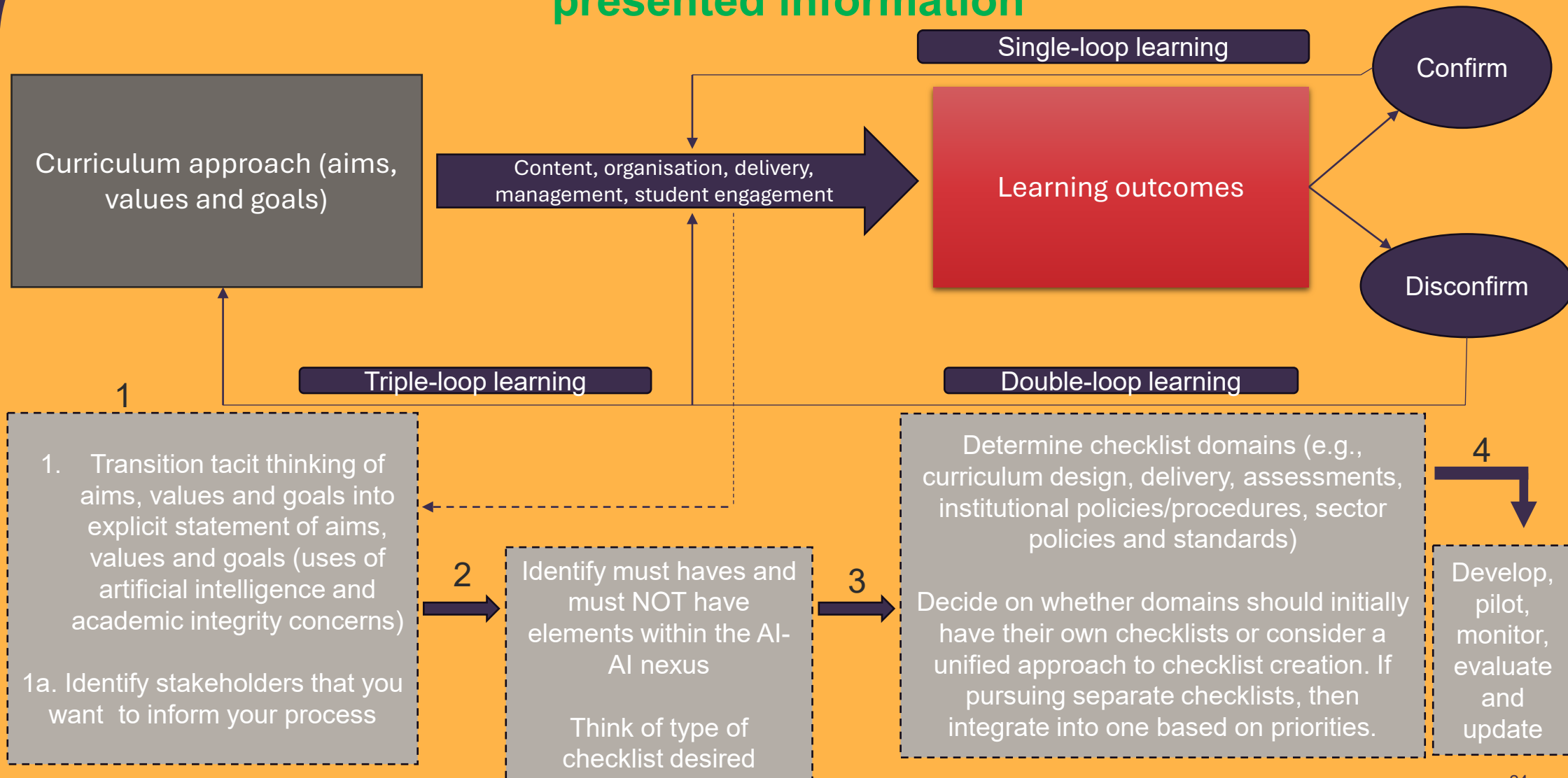
Scientific evidence

Source: adapted from Winters et al., 2009, p. 5/9

And now to making your checklist

Thank you for your patience with this part of the workshop. Hopefully, you'll see some information useful in making your checklist.

The process will now involve a Delphi technique approach to collecting, sharing and critiquing the checklists.

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Suggested approach toward the creation of a checklist based on presented information

Single-loop learning

Confirm

Curriculum approach (aims, values and goals)

Content, organisation, delivery, management, student engagement

Learning outcomes

Disconfirm

Triple-loop learning

Double-loop learning

1
1. Transition tacit thinking of aims, values and goals into explicit statement of aims, values and goals (uses of artificial intelligence and academic integrity concerns)

1a. Identify stakeholders that you want to inform your process

2
Identify must haves and must NOT have elements within the AI-AI nexus

Think of type of checklist desired

3
Determine checklist domains (e.g., curriculum design, delivery, assessments, institutional policies/procedures, sector policies and standards)

Decide on whether domains should initially have their own checklists or consider a unified approach to checklist creation. If pursuing separate checklists, then integrate into one based on priorities.

4
Develop, pilot, monitor, evaluate and update

Tacit knowledge: knowing more than a person can tell due to being aware of a particular item rather than directly referencing them (Polanyi, 1958, 1966).

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An important benefit of checklists is that they provide a pre-implementation evaluation criteria of effectiveness.

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